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THE THIRTEEN PRAGMATISMS. II.

THE purpose of this paper, as indicated at the beginning of the former instalment, is to discriminate all the more important doctrines going under the name of pragmatism which can be shown to be not only distinct, but also logically independent *inter se*. Three such divergent pragmatist contentions have thus far been noted. "Pragmatism" was primarily a theory concerning the "meaning" of propositions; but this theory, because of a latent ambiguity in its terms, breaks up into two: (1) The meaning of a proposition consists in the future consequences in experience which it (directly or indirectly) predicts as about to occur, no matter whether it be believed or not; (2) The meaning of a proposition consists in the future consequences of believing it. The first of these was seen to suggest (though it by no means necessarily implies) the third variant of pragmatism, namely, a doctrine concerning the nature of truth; viz., that the truth of a proposition is identical with the occurrence of the series of experiences which it predicts, and can be said to be known only after such series is completed. "Its truth *is* its verification." This contention, that judgments acquire truth only in the degree in which they lose predictive character and practical bearings, has been shown to be wholly barren and useless, since it affords no answer to the real epistemological question concerning the criterion of the truth of propositions whose specific predictive implications have not yet been experienced.

4. It is, however, not difficult to see through what associations of ideas some pragmatists have been led to emphasize this notion of the *ex post facto* character of all truth. Largely, it would appear, it derives its plausibility from its resemblance to the ordinary empirical doctrine that those general propositions are to be regarded as true which, so far as they have been applied, have been found to be realized in past experience. This latter doctrine, from which the former is often not clearly distinguished, may be set down as another of the things that pragmatism is frequently supposed to be. It is the doctrine sometimes sententiously expressed by the observa-

tion that those propositions are true which "will work" or "which you can live by." What the evolutionary empiricists who are fond of this observation almost always really mean by it, is that those judgments are true which hitherto *have* worked; in other and more precise words, that I am, in advance of the actual realization or verification of the future experiences which may be predicted by a given judgment, entitled to regard it as true if it is *similar* to, or is a special application of, a general *class* of judgments which my memory tells me have thus far had their implied predictions realized. But this is by no means identical with the principle mentioned in the preceding instalment, and vigorously insisted upon by some pragmatists, that each *individual* judgment can *become* true only through, and contemporaneously with, the presentation in consciousness of those specific subsequent experiences which it points to and prognosticates.

5. If, now, we are to set down this evolutionary empiricist criterion of truth as one expression of pragmatism—at least as that is popularly understood—it is necessary to add that this formula, too, suffers from ambiguity, and therefore breaks up into two quite distinct criteria. The ambiguity is analogous to that already pointed out in the pragmatist's theory of meaning. A belief may "work" in two very different senses, either by having its actual predictions fulfilled, or by contributing to increase the energies or efficiency or chance of survival of those who believe it. The Jews, for example, believed persistently for many centuries that a national Messiah would come in the next generation to restore the independence and establish the supremacy of Israel. In one sense, this belief did not work; for the events which it predicted did not occur. But biologically considered it worked wonderfully well; for it assuredly did much to produce the extraordinary persistency of the Jewish racial character, and the exceptional energy, self-confidence, and tenacity of purpose of the individual Jew. Many beliefs involving false predictions are biologically unfavorable, namely, if they lead to physical conduct ill adapted to the conditions of the believer's physical environment. You can not "live by" the belief that fire will not burn. But, also, some false or never-realized predictions, and many beliefs having apparently no predictive character—and no capacity for empirical verification—have shown themselves to be excellent things to live by. And if we are to take the doctrine that the true is the "livable" in its second and more unquestionably pragmatistic sense—if we are to identify the validity of beliefs with their biological serviceableness—we should apparently have to classify as "true" many judgments which pre-

dict nothing, and many which confessedly predict what is not going to occur.

6. Partly, however, what I have called the theory of the *ex post facto* nature of truth is a somewhat blurred reflection of a certain metaphysical doctrine, which, although not always very explicitly put forward, appears to me to have a rather fundamental place in the characteristic mode of thought of most representatives of pragmatism. This is the doctrine of the real futurity or "open-ness" of the future, and of the determinative or "creative" efficacy of each "present" moment in the ever-transient process of conscious judgment, choice, and action. The two parts of the doctrine obviously enough go together: if the process truly brings into being at each new moment a genuinely new and unique increment of reality, then, so long as any moment's increment has not yet been brought forth, it can not yet be called in any intelligible sense real; and if, similarly, the thing that is to be is a sheer nonentity until it enters into actual, temporal experience, the moment in which it becomes an experience must be credited with the creation *"ex nihilo"* of a new item of being. This doctrine of what M. Bergson calls a *devenir réel,* and of the creative function of consciousness, which is the pregnant ontological preconception from which a great variety of confused pragmatistic ideas have proceeded, unquestionably has certain epistemological implications. Such a metaphysics appears to imply the partial contingency and (from the standpoint of any "present" knowledge) indeterminateness of the future content of reality. But these implications are not synonymous with the *ex post facto* theory of truth in the generality with which that has usually been expressed. The future may be—and by the same pragmatists, when they adumbrate this sort of metaphysics, apparently is—regarded as presenting to our understanding only a narrow margin of the unpredictable; its general character, and the greater mass of its content, may be supposed, without departing from the conception in question, to be predetermined by the accumulated and crystallized results of reality up to date, of which any possible future and novel increment of being must be the child, and to which it must be capable of accommodation. And at all events, there is nothing in this sort of thoroughgoing metaphysical temporalism which justifies the denial of the possibility of the making of "true" judgments about contemporaneous or past (but not yet consciously verified) realities.

7. It is a frequently repeated observation of pragmatists, in moments when they are more mindful of the psychological than of the metaphysical antecedents of their diversely descended conceptions, that the true, in its most generalized character, is "the satis-

factory''; it is, says James, that which ''gives the maximal combination of satisfactions.'' Or, in Perry's careful formulation—with an amendment which we have recently been told, upon good authority, would make it entirely acceptable to a pragmatist—''the criterion of the truth of knowledge is the satisfying character of the practical transition from cognitive expectation to fulfillment, or the resolution of doubt into practical immediacy.''[1] Now this doctrine which identifies the truth with the satisfactoriness of a given judgment may mean any one of three things. It may, in the first place, be a simple psychological observation—from which, I fancy, few would dissent—indicating the *genus* of feelings of which the ''emotion of conviction'' is a species. To doubt, to inquire, to have before the mind certain potential material of judgment that is not yet accepted as true, is, of course, to experience dissatisfaction; a specific sense of discomfort and of non-fulfillment is the emotional concomitant of the doubting or the deliberative moment, and is doubtless the principal spring which prompts men's search for truth. And to believe, to hold true, whatever more it may be, is always at least to be satisfied in some degree with one's mental content of the moment, to find it good, or at all events not so bad as some contrary judgment which, for its sin of insufficient satisfyingness, has been shut away into the outer darkness of non-acceptance.

8. But this psychological truism, that to pass from doubt to belief is to pass from dissatisfaction to a relative satisfaction, is quite a different thing from the first of the pragmatist epistemological contentions that appear to be based upon it. This asserts that the way to determine whether a proposition is true is to apply the test of ''satisfyingness''; and to apply it directly and *simpliciter*. There is, according to this version of the nature of truth, to be no attempt to determine the differentia which distinguishes the species ''conviction'' from the genus ''satisfaction,'' or the subspecies ''highest discoverable type of certitude'' from ''conviction'' in general; and there is to be no arranging of satisfactions in a hierarchy and no pretension to define the conditions under which a maker of rational judgments *ought* to be satisfied. From many expressions of pragmatist writers it would appear that, while the term ''satisfaction'' is ''many dimensional,'' one dimension is as good as another; and that the final and decisive warrant for belief—the mark of the valid judgment—is the capacity of the judgment to yield the maximum bulk of satisfaction, measured indifferently in any of its dimensions. But since the dimensions *are* many, it may manifestly turn out that the greatest total volume may not give the potential maximum of any given dimension taken singly. The liking

[1] A. W. Moore, in this JOURNAL, Vol. IV., p. 576.

for luminosity of meaning, or for conceptual consistency, or for completeness of empirical verification, may fail to get full satisfaction in a judgment; but the judgment may, it would seem, still be "true," if it compensates for these limitations by a preponderant satisfactoriness with reference to other desires or interests: by its congruency with our habitual ways of belief, or its charm for the imagination, or its tendency to beget a cheerful frame of mind in those who accept it.

I think it possible that some pragmatists may at this point protest that they know of no one who seriously holds this view; certainly, it appears to me to be a curious view to hold. But I think one is justified in calling upon all of the name who reject this doctrine to take (and faithfully observe) an oath to abstain from a fashion of language which they have much affected; to refrain from identifying the true with the satisfactory *simpliciter*, to cease speaking of satisfaction as a "*criterion*" of validity, and to confine their assimilation of the two concepts to the much more qualified and commonplace thesis which follows.

9. This is pragmatism number seven *plus* a more or less explicit admission that our "theoretic" satisfactions have a special character and special epistemological pretensions; that our "intellectual" demands—for clear meanings, for consistency, for evidence—are *not*, and can not be, satisfied, unless their peculiar claim to precedence in the determination of belief is recognized; and that this claim is a legitimate one, to which men should (though they often do not) subordinate their impulse to accept any conclusions that have any kind of satisfactoriness. According to this view, "satisfaction" is still insisted upon as an essential mark of the apprehension of "truth"; but it is precisely a satisfaction which is not to be had except upon condition that other possible satisfactions be ignored or, in many cases, flatly rejected. Between this and the preceding (eighth) doctrine some pragmatist writers seem to waver. James, for example, often uses expressions (some of which have been quoted in the two foregoing paragraphs) implying the doctrine of the commensurability and equivalence of all satisfactions. But he elsewhere (*e. g.*, in a controversy with Joseph in *Mind*, 1905) expressly distinguishes the "theoretic" from the "collateral" satisfactions connected with the processes of judging thought; and he does not appear to deny that the former may conflict with the latter, or that, in the event of such conflict, they ought to be preferred. To the objection, offered by his critic, that if such admissions be made the pragmatist's criterion of validity is not practically distinguishable from the intellectualist's, James opposes nothing more relevant than a sketch of the genesis and evolution of the demand of the human mind for

consistency.[2] This sketch purports to show—if I understand it—that the desire (more characteristic of some minds than of others) to avoid self-contradiction is historically engendered through the crystallization of repeated experiences of uniformity in "things" into fixed subjective habits of expecting specific uniformities—habits so fixed that when such an expectation is disappointed "our mental machinery refuses to run smoothly." How the transition from the idea of uniformity to that of consistency is accomplished here, remains obscure to me; but even supposing the evolution of the one into the other to be completely and convincingly traced, these interesting historical speculations do not show, they do not even tend to suggest, that the demand for consistency in our judgments, as we now find it—playing its captious and domineering role among our mental cravings—is not quite distinct from all its fellows and their rightful, though their often flouted, overlord. In the present sense, then, the pragmatist's criterion of truth, whether right or wrong, seems entirely destitute of any distinctive character; it is simply the old, intellectualist criterion, supplemented by the psychologically undisputable, but the logically functionless, remark that, after all, a "theoretic" satisfaction is a kind of satisfaction.

10. Another pragmatism, and one that undoubtedly has real epistemological bearings, is the doctrine of radical empiricism conjoined with the doctrine of the necessity and legitimacy of postulation; the doctrine, in other words, that "axioms are postulates" and that postulates are as valid as any human judgment ever can be, provided they be the expression of a genuine "practical" need. This may look like our eighth kind of pragmatism over again, expressed in other terms; but in certain important particulars it is really a distinct theory. It contains, in the first place, a special negative contention: namely, that there are no strictly compulsive or "necessary" general truths, no universal propositions that can force themselves upon the mind's acceptance apart from an uncoerced act of voluntary choice. And on its positive side, it identifies the true, not with those judgments which slip so easily into the mind that they afford a present emotional state of satisfaction, but with those that man's active nature requires as working presuppositions to be followed in its reaction upon present experience and its instinctive endeavor to shape future experience. This doctrine seems to me to be quite unequivocally expressed by Schiller in a well-known essay in "Personal Idealism." " The 'necessity' of a postulate," we are told, "is simply an indication of our need. We want it, and so must have it, as a means to our ends. Thus its necessity is that of intelligent, purposive volition, not of psychical, and still less of physical,

[2] *Mind*, N. S., Vol. XIV., p. 196.

mechanism." "Behind the 'can't' there always lurks a 'won't'; the mind can not stultify itself, because it will not renounce conceptions it needs to order its experiences. The feeling of necessity, therefore, is at bottom an emotional accompaniment of the purposive search for means to realize our ends."[3]

11. A kindred but a much less thoroughgoing doctrine seems to constitute one of the pragmatisms of James. The author of "The Will to Believe" would, I suppose, still vigorously deny the possibility of reaching "necessary" conclusions with respect to many issues, including some of the greatest importance in relation both to the purely utilitarian requirements of our living and to our higher interests; and he would, clearly, still maintain the propriety and the practical inevitableness of voluntary postulation in such cases. But that there are *some* truly coercive and indubitable truths, some items of *a priori* knowledge inhering in the native constitution of a rational mind, James pretty fully and frankly declares, in his recently published volume of lectures. "Our ready-made ideal framework for all sorts of possible objects follows from the very structure of our thinking. We can no more play fast and loose with these abstract relations than we can with our sense experiences. They coerce us; we must treat them consistently, whether or not we like the results."[4] This, obviously, is no doctrine that axioms are postulates, or that behind every "can't" there lies a "won't"; it is the doctrine that axioms are necessities and that the action of voluntary choice in belief is always limited by a permanent system of *a priori* principles of possibility and impossibility inhering in the nature of intellect, at least as intellect is now evolved. It is compatible, at most, with the opinion that there are not so numerous, nor so useful, axioms as some dogmatic philosophers have supposed, and that, when axioms fail us, postulates must in many cases be resorted to.

12. A point of pragmatist doctrine separable from (though not inconsistent with) either of the two last mentioned, is the assertion of the *equal* legitimacy of those postulates (such as the uniformity of causal connection, the general "reliability" of nature, and the like) which appear indispensable as presuppositions for effective dealing with the world of our physical experience, and of those which, though lacking this sort of "physical" necessity as completely as they do the logical sort, yet seem demanded in order to give meaning to, or encouragement in, men's moral strivings, or to satisfy the emotional or esthetic cravings of our complex nature. It is conceivable enough that some pragmatists should refuse to recognize the equal standing of these two classes of postulates, should

[3] Schiller, "Axioms as Postulates," § 11, in "Personal Idealism."

[4] James, "Pragmatism," p. 211.

accept the first while rejecting the second; and it is a fact that not all who find a place for both agree as to the number and range of the second sort. The more extremely liberal forms of the doctrine of the right to postulate freely and to treat postulates as truths, tend to lapse into identity with the eighth variety of pragmatism, which identifies the true with the "maximally satisfying"; but in its more cautious and critical forms, the argument from the practical inevitableness of certain scientific to the legitimacy of certain ethico-religious postulates must be regarded as a distinct type of pragmatist epistemology, and perhaps the one which—if pragmatism ought to have practical bearings—best deserves the name.

13. Lastly, there remains a second pragmatist theory of the *meaning* of concepts or judgments—which brings us back to the topic, though by no means to precisely the doctrine, with which our enumeration began. It may be expressed thus: an essential part of our idea of any object or fact consists in an apprehension of its relation to some purpose or subjective interest on our part; so that no object of *thought* whatever could be just what, for our thought, it *is*, except through the mediation of some idea of purpose or some plan of action. The language of some pragmatist writers might lead one to suppose that they consider the *whole* meaning to be reducible to this teleological reference; but such a view does not seem to me intelligible, and it does not appear certain that any one really intends to maintain it. But it is evident that there are several logicians who think it both true and important to declare that a relation to a purpose constitutes an intrinsic and a determinative element in the connotation of any notion. It is, I suppose, such a principle that Moore intended to illustrate in recently pointing out that, however objective the virtues of a given candidate for office may be, he could neither be "clean" nor a candidate were there not present in the mind of every one so representing him the idea of possible voting to be done. And I suppose the same view is, in part, at least, what Schiller has sought to enforce in these columns, in insisting that nobody can be "lost" except with the aid of the existence in the universe of some purpose in some mind, requiring the presence of the "lost" person (or of the persons from whom he is lost) in some place or relation from which he is (or they are) excluded by virtue of his "lostness."[5] Schiller appears to me to have entangled this theory of meaning in a confusing and illegitimate manner with questions about "truth" and "reality"; but to pursue this distinction would involve a somewhat long and complicated analysis, which may not here be undertaken.

These thirteen pragmatisms have been set down, not in a topical

[5] This JOURNAL, Vol. IV., p. 42, and pp. 483, 488.

order, but according to the leading of those associations of ideas through which the ambiguities of the several doctrines, and the transitions from one to another, become relatively intelligible. But it may be useful to arrange them here in a more logical manner, while still retaining the original numbering. Those forms of theory, the separate enumeration of which results from distinctions made by this paper, but overlooked by pragmatist writers themselves—in other words, the doctrines formulated by pragmatists in more or less equivocal terms—are indicated by the sign (a); each group of doctrines hitherto improperly treated as single and univocal has a common superior number:

I. *Pragmatist Theories of Meaning.*

1. The "meaning" of any judgment consists wholly in the future consequences predicted by it, whether it is believed or not (a^1).

2. The meaning of any judgment consists in the future consequences of believing it (a^1).

13. The meaning of any idea or judgment always consists in part in the apprehension of the relation of some object to a conscious purpose (a^1).

II. *Pragmatism as an Epistemologically Functionless Theory concerning the "Nature" of Truth.*

3. The truth of a judgment "consists in" the complete realization of the experience (or series of experiences) to which the judgment had antecedently pointed; propositions *are* not, but only *become,* true (a^2).

III. *Pragmatist Theories of Knowledge, i. e., of the Criterion of the Validity of a Judgment.*

4. Those general propositions are true which so far, in past experience, have had their implied predictions realized; and there is no other criterion of the truth of a judgment (a^2).

5. Those general propositions are true which have in past experience proven biologically serviceable to those who have lived by them; and this "livableness" is the ultimate criterion of the truth of a judgment (a^2).

7. All apprehension of truth is a species of "satisfaction"; the true judgment meets some need, and all transition from doubt to conviction is a passage from a state of at least partial dissatisfaction to a state of relative satisfaction and harmony (a^3).—This is strictly only a psychological observation, not an epistemological one; it

becomes the latter by illicit interpretation into one of the two following.

8. The criterion of the truth of a judgment is its satisfactoriness, as such; satisfaction is "many dimensional," but all the dimensions are of commensurable epistemological values, and the maximum bulk of satisfaction in a judgment is the mark of its validity (a^3).

9. The criterion of the truth of a judgment is the degree in which it meets the "theoretic" demands of our nature; these demands are special and distinctive, but their realization is none the less a kind of "satisfaction" (a^3).

10. The sole criterion of the truth of a judgment is its practical serviceableness as a postulate; there is no general truth except postulated truth, resulting from some motivated determination of the will; "necessary" truths do not exist.

11. There are some necessary truths; but these are neither many nor practically adequate; and beyond them the resort to postulates is needful and legitimate.

12. Among the postulates which it is legitimate to take as the equivalent of truth, those which subserve the activities and enrich the content of the moral, esthetic, and religious life have a coordinate place with those which are presupposed by common sense and physical science as the basis of the activities of the physical life.

IV. *Pragmatism as an Ontological Theory.*

6. Temporal becoming is a fundamental character of reality; in this becoming the processes of consciousness have their essential and creative part. The future is strictly non-real and its character is partly indeterminate, dependent upon movements of consciousness the nature and direction of which can be wholly known only at the moments in which they become real in experience. (Sometimes more or less confused with 3.)[6]

Each pragmatism of the thirteen should manifestly be given a name of its own, if confusion in future discussions is to be avoided. The present writer has neither the necessary ingenuity nor the ambition to devise a nomenclature so extensive. But however the several theories be designated, the fact of their difference, and of the incompatibility of some of them with some others, can hardly, just now, be too much insisted upon—in the interest of pragmatism itself. What the movement commonly so named most needs is a clarification of its formulas and a discrimination of certain sound and important ideas

[6] It is impossible to bring out the nature, motives, and reciprocal relations of dependence or incompatibility of these theories in any such condensed formulas. I hope no reader will attempt to take the above recapitulation as a substitute for the analytical discussion contained in the preceding paragraphs.

lying behind it from certain other ideas that are sound but not important, and certain that would be important if only they were not unsound. The present attempt to list the chief varieties, and to clear up the hidden ambiguities, of a doctrine nominally one and indivisible, is accordingly offered as a species of *Prolegomena zu einem jeden künftigen Pragmatismus.*

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DISCUSSION

SUB SPECIE ÆTERNITATIS

IT is worth while for philosophers to ask themselves whether the questions they are talking about are vital and significant, or the opposite. The article by Dr. Bush in a recent number of this JOURNAL raises the question in an interesting form. He there maintains that the significant, the live problems of philosophy do not concern timeless truth, or any reality "sub specie æternitatis," but have to do with straightening out the tangles of this our ever changing human experience. When philosophers take over ancient problems which arose in other ages of culture and life, and deal with them as if they were the really pressing problems of philosophy, they are dealing only with "secondary," defunct problems. Their task is no longer vital.

There is certainly much in this essentially pragmatic treatment of the great historic problems of metaphysics to commend it to our overpragmatic culture. Yet we may well hesitate to accept the doctrine completely.

Suppose we turn from the questions of metaphysics to those of science. Now I take it that a scientist believes that he is getting at the veritable constitution and structure of some sort of "reality." His problem arises because the reality presented to his experience can not be made to square with some system of concepts previously accepted as valid, in other words, because it can not be completely rationalized. And we are here interested in pointing out that the problems of science which arose in former periods of culture are not meaningless or insignificant to-day. Their formulation may have been inadequate because less was then known about that reality—"that experience," if you please—which set the problems then, and still sets them.

Moreover, the scientist believes that *while the reality studied may be subject to flux and development, yet the system of truths about*

that reality is eternally true. Thus, the physicist learns what matter eternally is, not in the sense that there is any piece of matter which eternally is, but that the truth about matter, about its structure, its transformations, its decay, perhaps, is itself a timeless truth. This holds good, too, for a Herbartian realist as well as for a Berkeleian idealist.

And so the scientist thinks to get at truth which is not merely a temporary thought structure, devised to straighten out a tangled situation. The true propositions and laws which he arrives at are meant to be true "sub specie æternitatis." And, as a fact, to say that anything is true "sub specie æternitatis" is only another way of saying that it is universally and timelessly true. However fleeting and changing a fact, or substance, or reality may be, yet if you can only identify it as an individual fact, hold it fast in thought and definition, any assertion about its change and its decay is itself a timeless assertion.

What has this to do with philosophy? Simply this: The philosopher, too, is interested in the structure of a *real* world; at least in the world of human experience, and in the *setting,* the *background,* the *environment* of that experience; whatever he can find out about human experience, or about its conditions, or its fate, he must of necessity think of as *timeless truth,* though it be truth about a *changing* world.

For, to be sure, *our* experience, *our* institutions, *our* demands are our own, different from those of yesterday, and our philosophy, our ethics, must be different from the philosophy of yesterday. Does this mean, then, that philosophy has nothing to do with eternal truth? Far from it. It means two things: First, though experience changes, flows on, develops, yet the truth about any situation, any crisis, yes, any feature of experience, is itself timeless truth, true "sub specie æternitatis." Secondly, the endeavor of philosophy should be to read *all* of human experience "sub specie æternitatis," to tell the whole significant story, and to grasp in one view the entire change. Such an endeavor may be vast, impossible; yet it is not meaningless, nor is the problem "secondary."

Two aids are at hand for thus getting a philosophy which can rightfully claim to be a philosophy "sub specie æternitatis": (1) A philosophy of history, which may hope to see the continuity of human ideals and values—to see the place of each significant crisis in human experience. (2) A complete logic, which may hope to see the continuity of all scientific categories—yes, of all categories which are present whenever one thinks at all.

One may, I think, reasonably hope to see, then, both in the ethical, social, and historical sciences and in the logical and epistemo-

logical sciences, a philosophy which is true "sub specie æternitatis," though it deals with human experience, with social and ethical institutions, ideals, crises, and tangles.

The problems of philosophy are more than historical episodes—critical junctures in the "developing situation" of a given culture epoch. They are that, but they are also more. They get their sting and vitality from no merely historical situation; their significance does not cease in a different historic epoch. The typical human experiences summed up and crystallized in any one of the *permanent* human interests do not *wholly* change. The *form* of the experience, and hence of the problem, remains constant. Likewise, the complete answer, always sought for, would be in the shape of a proposition whose truth is not subject to time. Let us say, if we will, that such problems are insoluble, such truth for the most part inaccessible (that it is not wholly so *vide* mathematics and logic), but to say this is not to relegate them to a realm of secondary and idle problems.

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SOCIETIES

SECTION OF ANTHROPOLOGY AND PSYCHOLOGY OF THE NEW YORK ACADEMY OF SCIENCES

REPORT OF THE SECRETARY

A JOINT meeting was held with the New York Branch of the American Psychological Association on November 25, 1907. An afternoon session was held at the psychological laboratory of Columbia University, and an evening session at the American Museum of Natural History. The Section nominated to the Council of the Academy the following as its officers for 1908: Chairman, Dr. Adolf Meyer; Secretary, Professor R. S. Woodworth.

Professor E. L. Thorndike reported some work on "Memory for Paired Associates," in which he has found that German-English vocabularies can be learned with a speed far in excess of what is regarded as possible in the usual teaching of a foreign language, and retained much better than would be expected from the results of Ebbinghaus on nonsense material.

Mr. G. H. Betts, in studying the "Correlation of Visual Imagery with College Standing," has been unable to detect any positive correlation. The relation seems to be a purely chance one.

Dr. E. W. Scripture described a method used in "Experiments

on the Subconsciousness, with Demonstration of Jung's Method of Detecting Emotional Complexes." After mentioning his own early experiments on the association of ideas, the speaker described some work he had lately done with Dr. Jung in the Psychiatrical Institute at Zurich, in which, following Jung's method, the subject gives associates with given words; the time is taken, and the subject is also required afterwards to repeat his former associations from memory. The presence of an emotional complex is indicated by slowness, forgetfulness, superficiality or unusualness of associates, etc. The emotional complexes so revealed are often causes of mental depression, anxiety, excitability, neurasthenia, and hysteria. Contrary to Jung, the speaker did not believe them causes also of *dementia precox.*

Dr. Scripture also demonstrated a method for the "Detection of the Emotions by the Galvanometer." The subject held his hands on large plate electrodes, and after the beam reflected from the mirror of the galvanometer had come to rest, emotions aroused in the subject would cause deflection. Reviewing the original discovery of Tarchanoff and the recent work of Peterson and Jung, the speaker concluded that the cause of the deflection lay in increased activity of the sweat glands.

Dr. J. Carleton Bell reported his experiments on the "Effect of Suggestion upon the Reproduction of Triangles and of Point Distances." The subject was required to reproduce the height of a given triangle, for instance, in the presence of figures higher or lower than the required height. In the first third of the experiments each of the six observers gave evidence of being influenced by both high and low suggestion, the low being the more effective. There were striking individual differences in the susceptibility to suggestion. As the experiments proceeded, the observers seemed to become habituated to the suggestion, so that the effect grew less and less marked.

Professor F. L. Tufts described his "New Spectrophotometer for the Study of Color Vision." The problem of determining the relative luminosity of lights of differing color is fraught with difficulty. Three methods have been used, but as they do not give perfectly concordant results, each depends on its own definition of what shall be regarded as equal luminosity. The three definitions are the following: (1) Two similar surfaces, illuminated by two lights of different color, may be said to be of equal luminosity if, in the judgment of the observer, they appear equally luminous. (2) Two similar surfaces, white, with black markings on them, illuminated by two lights of different color, may be said to be of equal luminosity if, when placed at the same distance from the eye, the details can be distinguished with the same minuteness. (3) Two similar surfaces,

illuminated by two lights of different color, are said to be of the same luminosity if, on rapidly replacing one by the other before the eye, there is no sensation of flickering. The author has modified the flicker photometer of Rood so as to use spectral colors. A white disk, rotating between the telescope and the prism of a spectroscope, is cut away for half of its circumference, so as to admit the colored ray from the prism for half of the time, while for the other half it reflects white light from a lamp the distance of which is adjustable along a photometer bar. By moving the lamp along the bar a point is found at which there is no flicker between the white and the colored lights. In this way the luminosity of different parts of the spectrum can be determined with reference to a given white. The relative luminosity of different parts of the spectrum was not changed by fatiguing the eye to one color. Though the eye be fatigued to green by several minutes' exposure to it, so that gray objects appear purple, yet the green of the spectrum has the same luminosity relatively to the other parts of the spectrum as when the eye is fresh. (An exception must be made to this statement, in the case of prolonged exposure to *red;* if this exposure is not simply long enough to give the complementary after-image, but is continued for a considerable number of minutes, the effect is to displace the point of maximum luminosity towards the violet.) This seems good evidence of the separateness of the luminosity and color senses. Another fact bearing in the same direction is that the luminosity curve of red-green blind eyes shows no constant deviation from the curve for normal eyes. The color-blind eyes so far examined do indeed show luminosity curves differing from that obtained from the majority of normal eyes, but the deviations are in some cases in one direction, in others in the opposite; and some eyes which are apparently normal in color vision have similar deviations from the curve obtained from the majority.

Professor J. McKeen Cattell reported an observation on "The Entoptic Fovea." The usual method of demonstrating the fovea entoptically, by looking through a blue glass or a chrome alum solution, fails with many individuals. But if the glass is removed after a few seconds, an after-image effect shows the fovea clearer than the background; and this is more readily seen than the effect while the blue screen is before the eye. The explanation of the effect is probably that the yellow spot absorbs much of the blue light, so that that part of the retina is less fatigued than the surrounding region.

Dr. Frederic Lyman Wells, under the title "The Tapping Test," communicated a study of the maximum rate of repeated voluntary movements during and at the limit of practise in one normal individual, with comparative reference to the performance in other

normal and in pathological subjects. The maximum rate has little, if any, relation to subjective feeling of efficiency. The practise curve shows less diurnal variation in its earlier than in its later stages. The general effect of practise from day to day is to increase initial efficiency, while the general effect of the "warming up" in a single day's work is to give relative immunity to fatigue. As a psychological measure, the maximum tapping rate is of little importance compared with the curve of the fatigue losses. The general interpretation of the tapping test is as yet far from clear; most of its phenomena, however, are probably of nervous rather than muscular origin.

Professor W. M. Wheeler gave an illustrated lecture "On Some Vestigial Instincts in Insects," in which he gave many instances of the reappearance, under unusual conditions, of instincts which had been active ancestrally, but had disappeared. An instinct which seems dead in the species may thus be resuscitated and serve a useful purpose.

Professor W. P. Montague read a paper on "The Addition of Intensities," in which he maintained that intensities are true quantities, since they are susceptible not only of the relation of more and less, but also of the relation of whole and part. The component parts of an intensive quantity are synthesized by "superposition," and not, as in the case of extensive quantities, by "juxtaposition." It is usually supposed that intensive quantities are simple and without parts. This misconception results from a failure to see that superposition is as truly an additive synthesis as is juxtaposition. The paper gave examples of the addition of several types of intensities, such as velocity, density, temperature and pain. The fundamental rule for the addition of intensities is: So combine the quantities as to keep the extensive factors of the whole equal to the extensive factors of each of its parts. For example, if two densities are to be added, the volume of the sum must be equal to the volume of each of the components. This could only be accomplished by superposing one volume upon another in such a way as to make them interpenetrate. The rule for adding intensities has its analogue in the rule for adding extensive quantities, according to which we are bidden to combine the quantities in such a way as to keep the intensive factors of the whole equal to the intensive factors of each part.

Professor D. S. Miller spoke on "Applied Philosophy and Applied Psychology," devoting himself mainly to the consideration of the various psychological methods by which habit and character can be altered. He mentioned, among such methods, practise, hypnotic suggestion, and attraction.

R. S. WOODWORTH,
Secretary.

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REVIEWS AND ABSTRACTS OF LITERATURE

Structure and Growth of the Mind. W. MITCHELL. London: Macmillan & Co. 1907. Pp. xxxvi + 512.

In writing the present volume the author has had in mind the needs of the lecturer on philosophy. Where difficult matters are to be treated of it is desirable to put into the hands of the student some treatise which can be taken as the topic for elucidation and discussion. The author believes, moreover, that psychology is the proper introduction to philosophy, since it transforms common sense, leads into the central problems of metaphysics, and supplies necessary data for logic, esthetics, education, medicine, and neurology. The present volume is thus designed to be a text-book, an "introduction with reference to psychology." Now it may be said at once that its style forbids its use except by the most advanced and patient students. Accustomed to the dreariness and obscurity which commonly prevail in the field of epistemology, one is at first inclined to hold the subject-matter accountable. But this would scarcely explain the undeniable dreariness and obscurity of the preface. Even what the reviewer has gleaned concerning the plan and scope of the book has cost him hard study; and he is by no means certain of his conclusions. Pronouns rarely refer to anything that still lingers in the memory of the reader, so that it is almost invariably necessary to retrace one's steps and grope for the context. Furthermore, there is no contour or difference of emphasis, so that reading the book is like swimming under water with never a chance to come up and look about. And the style is *really* regrettable because the book is worth reading.

The body of the book is taken up with what the author calls "the direct explanation of mind," as distinguished from the indirect or physiological explanation, which receives only a single chapter at the end. Part I. serves as a general introduction, and contains the essentials of the author's general theory of mind. We shall confine our critical remarks to this portion of the book. Materialism and monism agree, the author holds, in affirming that mind and brain do not interact, and in aiming to make the physical explanation complete in its own terms. Neither of these theories, and dualism much less, can object to a similar attempt to explain mind in *its* own terms. But such explanation is possible because mind as such grows and has structure. One hesitates to treat the mind as a thing only because "thing" is commonly supposed to signify inherence of attributes in a transcendent essence. When we understand that a thing is "the system of its attributes" and that it is absurd to look for anything that is not actual or possible object of knowledge, we discover that mind is in fact the primary thing. Physical things turn out to be "abstractions in a way that mind is not." "Nature is reality as it is presented to sense, and, in order to deal with it as an independent system, we abstract from its relation to sense." Not troubled by the absurdity involved in this proposition, the author proposes to improve upon dualism and parallelistic monism by the following generalization: "A mind and its experiences are realities that are presentable to sense

as the brain and its actions. In that respect the mind and experience are not parallel with nature, but a part of it. And, on the other hand, the facts of nature, including the brain, whenever they are phenomena, are not parallel with mental phenomena, but part of them." But here is parallelism returning with seven other devils. For what is the relation between the system of things presentable to sense and the system of experience internally viewed? Why should the mind and its experiences be presentable to sense as the brain and its actions? Why should the visual experience of the blue sea be presentable to sense as a cerebral process? We are asked to suppose that what a mind knows itself and its experiences to be, bears no intelligible relation to what another sentient being perceives them to be. Now whether the fault lies with sense or with the externality of the knower makes little difference. One identical entity is two utterly irrelevant things, one for itself and another for an external observer, or one for sense and another for thought. Such a parallelism differs from the agnostic or monistic parallelism which it is designed to replace mainly in that it involves an entirely untenable and virtually contradictory distinction between sense and thought, and between internal and external knowledge. In the concluding chapter the indirect or physiological explanation of mind is provided for, to complete the physical account of the world with a study of the physical correlates of mind, these constituting mind as a possible object of sense. These correlates correspond not in quality, but in that they form a system with a complexity and connections answering to those of the system of mind. But we are informed that "there is no discovery about the nervous system that does not have its place and full value in the direct account of mind." And apparently this is not because the nervous system is itself a phenomenon, but because when mind is studied objectively, as in the case of comparative psychology, it is indistinguishable from forms of organic and nervous functioning. Thus the author's correlative theory would seem to be not only philosophically untenable, but scientifically unworkable.

Turning to mind as known directly by ourselves, "who are our minds and have its experiences," Professor Mitchell makes a preliminary analysis, first, of the general divisions of experience (*i. e.*, consciousness), and, secondly, of the *course* of experience. Before proceeding with the three main types of experience, *knowledge, interest* and *action,* the author makes the very important announcement that to have any kind of "object experience" is also to have a "subject experience." "The experience of an object is never without experience of our self, and the experience of our self is never without experience of an object." Now such a statement as this becomes progressively unintelligible with added reflection. By the "subject experience" is meant not the presupposition of a real subject, but the subject *in consciousness.* And how can the subject in consciousness be distinguished from the object of consciousness in general? By the admission of the author, both are content; there is consciousness *of* both; and both are entities having being apart from the consciousness of the moment. When the subject factor of consciousness becomes in a later moment the object of consciousness, it is held to be the same entity, and

must possess identical content. It must be proper to say that in the previous moment this subject or self was known, at least for purposes of identification; and the subject becomes only one of the objects of consciousness which, like any other object, may pass from margin to focus. The author's generalization quoted above now becomes the intelligible, but highly questionable, proposition that in every case of consciousness the self-thing is experienced among other things. Such a change of terminology, furthermore, would essentially alter the author's treatment of knowledge, interest, and will; for in distinguishing these types of consciousness he virtually appeals to the unanalyzable subject experience.[1] It is held that we immediately experience three different attitudes of the subject towards the object: we may consciously think it as real, feel towards it, or seek it as an end. "In our experience of an object all that we make object, all that we set before us, we think; how it strikes or affects us, we feel." "In seeking any end I must have thought of it and be pleased with it, but I only seek it when I give myself to it, and to realizing it." Such distinctions are wholly valueless because they rest neither on the analysis of function nor on the analysis of content, but only on an appeal to experiences which by definition are incapable of verification.

Having distinguished knowledge, interest, and action as the main strands of experience, the author turns to a study of the "course" of experience. In a course of experience every next stage is determined by the present one, which is "an attitude that does not satisfy," and "works itself into one that does." All experience is thus experience of self-activity. Lecture V., containing a brief statement of the author's method of "direct explanation," is in many respects the best chapter in the book. We are to explain the development of a course of experience; such, for example, as the transition from sensation to knowledge. The factors involved are three: the given content, which the author calls the "occasion"; the self; and the faculty, or that special function of the self which is engaged. But we can eliminate the self, because it always functions through one of its faculties. For purposes of explanation, the faculty is not experience, but the operative mental organization; though the reader is encouraged to suspect that it is somehow connected with the experience of self-activity.

In the remainder of the book, constituting its greater part, Professor Mitchell deals in detail with "Sympathetic and Esthetic Intelligence," and with "Growth of Intelligence." Under the first of these headings, after treating of imitation, the author passes to "Absorption in Object," a special type of experience which he isolates mainly for purposes of emphasis. In this experience interest is confined to the object itself; as in "fellow feeling," through which we fixate the experience of others; in "individuation," through which we regard natural objects in all their concreteness and richness; and in the esthetic consciousness proper.

[1] *Cf.* the author's remarkable statement on p. 100: "But in all experience beyond mere sensation the difference between subject and object is felt. It is not felt as a difference between object and object: we do not think the difference. It is felt as an attitude towards the object."

Under the heading "Growth of Intelligence," the author discusses the stages of knowledge and the development of science. Here we deal with that function of intelligence which, unlike the esthetic interest, breaks up the individuality of things, and aims to discover their systematic relations. While distinguishing "sensory," "perceptual," and "conceptual" intelligence, the author insists that "all grades of intelligence have not only a common process or method, but exercise it about a common real object." In sensory intelligence there is a series of sensations denoting the stimulus and the reactive process. Perception begins "when a sensory object is thought as a quality, and, most simply, as a member of a group." Conception begins "in the explicit thought of connections that are implicitly thought in perceiving."

In the space at our disposal it is impossible to convey an adequate idea of the wealth of penetrating analysis which this book contains. There is scarcely any philosophical topic upon which the author does not make some instructive comment. The fundamental difficulties to which attention has been called above, together with the obscurity of style and arrangement, militate most seriously against the use of this work as a text-book or systematic treatise; but it will profit any student to refer to it for light on the epistemological approach to special problems.

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Studies from the Psychological Laboratory of Wesleyan University. Vol. I., No. 1. *Monograph Supplement, Psychological Review,* Vol. VIII., No. 4, November, 1907. Baltimore: The Review Publishing Co. Pp. iv + 92. *An Experimental Study of Visual Fixation.* RAYMOND DODGE.

Professor Dodge's experiments are directed mainly towards proving that there is no fixation point in the field of vision, and that there is no central retinal point of distinctest seeing to which every point of interest in the field of vision is brought. Instead of "fixation point," Professor Dodge proposes the term "fixation field." The eye is never perfectly still. Movements of the head, due to pulse and breathing and other irregular causes, constantly disturb visual fixation. There are no compensatory eye movements for these disturbances. Retinal fatigue is suggested as another motive of fixation movements. Vision becomes blurred when the same retinal elements are continuously excited. There is then a shifting of the eye so as to employ neighboring retinal elements. The author admits that the proof for this hypothesis is not conclusive. Still another visual motive for fixation movements is inadequate binocular adjustment. The author includes here movements of convergence and divergence.

Peripheral stimulus on the retina produces reactive eye movements to establish fixation. The peripheral stimulus may be due to a lapsed fixation or to the appearance of a new point of interest. The reactive movement of the eye will be exact, however, only occasionally and by accident, because of the slow reaction time of the eye and the intervening

movements of the head. Professor Dodge measured the reaction time of the eye by letting a beam of light fall obliquely on the cornea simultaneously with the exposure of a word a little to one side of a preexposure fixation mark. The reflection of the light from the cornea was photographed on a falling plate, which registered a lateral movement of the eye as a slanting line; the record was ended when the subject shut off the light with a Cattell sound-key on beginning to speak the word he saw.

The quickest reaction obtained from exposing a 41′ word 1° 30′ to the right of the prefixation mark was 130σ. The average of 17 such exposures was 151σ; the highest, 163σ; the mean variation, 9.9σ. The experiment was varied by taking a longer distance, and sometimes exposing the word to the right, sometimes to the left, which gave, for 23 other records, longer times.

The absence of a retinal point which is brought to bear on each point of interest in the field of vision was shown by getting an after-image of an illuminated wedge and then reading a word exposed about fifteen degrees to one side of the wedge. The after-image of the wedge was seen at some point about the word. The same words were exposed in three different series. Each time the wedge was seen at a different part of each word. Only rarely did the wedge appear at the same point in successive exposures. Professor Dodge concludes: "The psychophysiological dogma that there is a tendency to transfer every peripheral stimulus to a fixed punctiform functional retinal center is a myth. There is no punctiform functional center of the retina." There is an area of indefinite extent, varying with the character of the object of regard, where vision is more distinct. This merges into a vaguely bounded peripheral area of less clear and distinct vision.

The rate at which movements of the eye succeed one another for the purpose of adequately fixating different objects, is conditioned by the rapidity of the clearing-up process. By the "clearing-up process" the author means all that has usually been called latent time, retinal inertia, and the development of retinal stimulation. Six experiments are described, in which the time of the clearing-up process was measured under different conditions of the field of vision preceding and following the exposure. A white field preceded and followed by a field partly white and partly black cleared up (that is, became as white as the preceding and following white) in from five tenths to several seconds, according to the duration of the preceding exposure. A gray field preceded by one wholly black and followed by one wholly white was not seen at all after an exposure of 90σ. The author thinks this phenomenon analogous to the illusion of clear vision during eye movements which has been the subject of recent discussion. A phrase preceded and followed by a field half black and half white did not perfectly clear up even with an exposure of 500σ. The test of perfect clearing up was absence of any difference in intensity and apparent time of appearance between the halves of the phrase that fell on the white and black. In another experiment different results were obtained when a word (complicated with another word exposure) was preceded by black and followed by white, than when the

reverse was the case. Again, a horizontal line exposed before and after the word rendered the word uncertain. Several horizontal lines, however, cleared it up. A group of vertical lines almost completely obliterated it. The shortest adequate fixation pause in reading is given as between 70 and 80σ.

The apparatus that was used for determining the reaction time of the eye was also used to measure the fixation movements of the eye in reading. Every fixated object is seen in a more or less complicated setting. Peripheral seeing plays an important part in reading. Dearborn's hypothesis that the eye in the first fixation takes a more general survey of the line as a whole than in later fixations was confirmed. The exact position of the point of regard is not important. It may be at any part of a word. No one factor determines its precise position. The object of interest is not a point, but an area.

In his last chapter, Professor Dodge attacks the "traditional theory of motor local signs," according to which the retinal elements are differentiated and organized by the mediation of kinesthetic feelings that accompany the movements of the eye in bringing peripheral stimuli to the center. Professor Dodge asserts that there is "not one particle of unambiguous experimental evidence that can be adduced to its support." Neither the velocity nor the extent of our eye movements is known to us. Adequate sensations of eye movements do not exist. There is no evidence of any motion to bring stimulations of the fovea itself to its exact center. Professor Dodge proposes instead a theory of the "genetic organization of the retinal elements." If we suppose a retina in which the elements have not been mutually related and differentiated, then association into groups must soon take place through similar excitation of contiguous elements by the same patches of stimulus. Movements of the eye would bring different retinal elements into association—a single patch of stimulus now covering one group, now another which partly overlapped the first, and then a third which partly overlapped the first two, and so on. Each element of the retina would thus become related to all the other elements. Movements of the eye simultaneous with the shifting of patches of stimulus would relate the retinal organization with the organization of motor impulses. "This association must tend to standardize the group organization at various parts of the retina."

It is not clear whether Professor Dodge's theory is intended to explain the origin of retinal local signs, or the origin of the feeling of spatial relationship between them. He seems to mean local signs when he speaks of "the group differential organization of the retinal elements"; and the sentence "The psychological aspects of the retinal organization are given in the spatial relations of the various parts of the field of view," seems to mean that space relations are given immediately by the physiological differentiation of the retinal elements. On the other hand, the author goes on to speak of "a certain relatively late and relatively gross organization of the motor impulses," coordinated with the retinal organization, and serving as "a connecting bond between the organization of visual and the organization of tactual elements." The coordination of the

visual relationships "with the relationships of the tactual sense" produces "the complex organization of our sensory experience which we have given in immediate consciousness as space." If "group organization of the retinal elements" means the same as local signs, and the theory stops there, it is inadequate to explain spatial perception. If "organization of the motor impulses" is added, it is not clear how this theory gets beyond the one criticized.

A discussion of the technique of recording the eye movements is given in an appendix.

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Moral Training in the Public Schools. The California Prize Essays. CHARLES EDWARD RUGH, T. P. STEVENSON, EDWIN DILLER STARBUCK, FRANK CRAMER and GEORGE E. MYERS. Boston: Ginn & Co. 1907. Pp. 203.

The subject of moral training in the elementary schools of America is perhaps more widely discussed to-day than at any previous period in our history, and the present volume is certain to be hailed as timely. A citizen of California, who withheld his name, recently placed in the hands of the Reverend Charles R. Brown, a pastor at Oakland, California, President David Starr Jordan, of Stanford University, and Professor Fletcher B. Dresslar, of the University of California, the sum of eight hundred dollars to be awarded as first ($500) and second ($300) prizes for the best essays on "Moral Training in the Public Schools."

Three hundred essays, "many of them of high merit," as the committee affirms, were submitted, and the first and second prizes were awarded, respectively, to Mr. Rugh and Mr. Stevenson. But three other essays—those by Messrs. Starbuck, Cramer, and Myers—seemed to offer such distinct and individual contributions to the discussion of the problem that they were included with the publication of the two prize essays.

Mr. Rugh's essay is the most notable of the series, and is most suggestive to the student of pedagogics. His familiarity with the literature of ethics and genetic psychology is evident, and he manifests a clear insight into the needs of the public schools. Mr. Stevenson's opposition to the parochial school supported by public funds is one of the clearest statements that has come to the attention of the reviewer. The paper by Mr. Myers is chiefly valuable because of the brief, but excellent, exposition of conditions in Germany, France, and England with reference to moral training in the schools.

On one phase of the problem all the essayists are agreed, viz., that a secular system of education would be antagonistic to our national character and out of harmony with American political institutions. Mr. Stevenson asserts that sectarian school systems do not make good citizens, but devoted members of their respective sects.

The personality of the teacher is emphasized as the most potent factor in moral training, and several of the essayists lament the absence of the male teacher in the elementary schools of the United States, assuming

that our schools are training a race of effeminate men, lacking in virile, aggressive qualities.

The volume is a notable contribution to the discussion of moral education and allied problems, and the simplicity of treatment makes it easy reading. The absence of an index is to be regretted.

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The Psychological Experiences connected with the Different Parts of Speech. ELEANOR H. ROWLAND. *The Psychological Review,* Monograph Supplement, January, 1907. Pp. 42.

The writer started with the following query: "What differentiates the prepositional state of mind from that which makes up the meaning of other words? In general, why are other parts of speech easily adopted, while others defy all attempts to introduce them?" The experiments were conducted with only one subject and were made entirely on separate words. Three stages of meaning were noted: (1) a feeling of familiarity with the word, (2) a feeling that she would know how to use it, (3) the unrolling of the images. Lists of words of different parts of speech as much allied in significance as possible were selected, such as *weight, lift, heavy, under,* and the main conclusions are these: Concrete nouns stand for a "constant attitude binding together a variety of images," while the verbal noun demands not simply an attitude expressing possibility of action, but expressing the actual carrying out. With the verb there is usually a definite impulse to carry out the action suggested. The adjective, on the other hand, involves no purposive action, but usually has some feeling tone due to subjective reaction, since the whole self seems involved, and this latter fact accounts for the feeling of oppositeness discernible in so many adjectives denoting sense or judgment qualities, though they point to an object as possessing these qualities.

Prepositions are found to be without ideational content and so apparently can only be expressed by muscular tensions of various kinds. Hence the difficulty the child has in learning them. Adverbs are uniformly found to be less intimate than adjectives, as belonging less to the subject than the external world. Adverbs of place are felt in terms of tension, but differ from the tension of prepositions inasmuch as they are more purposive. Likewise transitive verbs have something of this prepositional character of tension *versus* ideation, but still have the power of expressing specified purpose. Again, an abstract noun and an adjective are alike in possessing the adjective characteristic of subjective reaction, though the noun maintains its character of standing alone, while the adjective points to something else. The pronoun, psychologically, is simply the pointing to something.

The original query is answered in showing that prepositions do not change, since new occasions for them do not arise, and their meaning is so bound up in the tensions of the whole organism that the possibility of variation is reduced to a minimum. Pronouns, likewise, and adverbs of

place and time do not vary; and, in general, the conclusion of the whole paper seems to be that in proportion to the ideational content do the words of language vary. A valuable bibliography is added relating to the nature of speech, nature of the different parts of speech, which parts of speech appear first in language and in childhood, which parts of speech vary most easily, aphasic changes. L. PEARL BOGGS.

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Ueber den Einfluss des Helligkeitskontrastes auf Farbenschwellen. ROSWELL P. ANGIER. *Zeitschrift für Sinnesphysiologie,* Band 41, 1906. S. 343–363.

A small field of color and a gray background were so arranged that the following three quantities could be varied independently—the intensity of the gray ground, the intensity of colored light in the central field, and the intensity of white light that could be mixed with this colored light of the central field. The author studied the effect of contrast between the two gray values (of field and background) on the threshold of color vision in the central field. This central spot was imaged wholly within the fovea of the observer. It was believed that the threshold values of color would be more exact if the observer was not asked to judge on the presence or absence of a color, but if he was rather asked to judge of the difference between two colors. To this end the right and left halves of the central spot were given complementary hues (red and green or blue and yellow) whose *Peripheriewerte* had been carefully equated; whose stimulation values or *Weissvalenzen,* therefore, according to v. Kries, were equal for the color-sensitive elements of the eye. Only one of these complementary pairs was used in a series, but the positions of the two hues could be exchanged without the knowledge of the observer, and that intensity of the colored pair was taken as the threshold at which the observer could correctly state for five times in succession in which relation the colors stood (*e. g.,* red-green or green-red). The eyes of the observer were kept at a moderate degree of dark adaptation.

It was found that so long as the intensity of the background (outer white) is less than that of the white light which is added to the color of the central field (inner white) variations in the former have no appreciable effect on the threshold for color, in this field. But every increase in the intensity of the outer white *over* that of the inner white raises the color threshold. If the intensities of outer and inner white are kept equal and are increased together, the color threshold is raised; and if the former are decreased, the latter is lowered. Whatever the intensity of outer white, an increase or decrease of the intensity of inner white raises or lowers, respectively, the color threshold. Thus any increase in the intensity of the white light, whether in the outer or inner field, determines a rise in the threshold for color: notwithstanding that when the outer field is lightened the subjective brightness of the colored spot is *decreased* (by contrast) and its saturation *enhanced,* while when the inner field is lightened by white light the subjective brightness of the colored spot is *increased* and its saturation *diminished.*

Before these results were published, but after the investigation had been completed, they were in part independently confirmed by Révész.

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JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. November, 1907. *The Objects of Knowledge* (pp. 577–587): JOSEPH A. LEIGHTON. – Object as term of reference for thought to be distinguished from external, existential thing. Cognitive objects are: I. Objects of public or common reference; these include (*a*) all physical objects, (*b*) social psychological objects. II. Subjective, individual objects. III. Universal truths; the over-individual principles of validity. The physical sciences are sciences of over-individual physical existents. The psychological sciences are sciences of over-individual psychical existents. Mathematics, logic, esthetics, and the philosophy of religion are sciences of over-individual first principles. *Kant's Classification of the Forms of Judgment* (pp. 588–603): ARTHUR O. LOVEJOY. – Dr. Hauck has recently shown in *Kantstudien* that Kant did not take his table of judgment forms from current usage, but manufactured it to meet the supposed needs of "transcendental" logic. The claim, therefore, to base the subsequent portion of the "Critique" upon the table of judgments is an elaborate, though unintentional, pretense. *Possibility and Reality* (pp. 604–615): EDMUND H. HOLLANDS. – There are two typical conceptions of possibility: (*a*) possibility is a subjective notion; (*b*) there is absolute possibility. Spinoza held the first view, Leibniz the second. The distinction of the possible from the real, the essential from the existential, results in self-contradiction. *Discussion: Dr. Ewer on the Freedom of the Will* (pp. 616–623): G. W. CUNNINGHAM. – The existential standpoint is inadequate. It is a problem of concrete experience, and its solution is in the direction of teleological categories. The only intelligible freedom is freedom *in* necessity. *Reviews of Books:* William James, *Pragmatism:* CHARLES M. BAKEWELL. Walter Kinkel, *Geschichte der Philosophie als Einleitung in das System der Philosophie:* WM. A. HAMMOND. S. S. Laurie, *Synthetica:* WALTER G. EVERETT. J. Reinke, *Philosophie der Botanik:* E. G. SPAULDING. *Notices of New Books. Summaries of Articles. Notes.*

REVUE PHILOSOPHIQUE. December, 1907. *La psychologie quantitative. III., Psychologie quantitative expérimentale* (pp. 561–587): J. J. VAN BIERVLIET. – A study of the methods of quantitative psychology as applied to problems related to pedagogy. *La mémoire affective: Nouvelles remarques* (pp. 588–613): TH. RIBOT. – A new attempt to establish the existence of affective memory through facts little liable to double interpretation. *La sympathie esthétique* (pp. 614–631): VERNON LEE. – A critical study of Lipp's *Einfuhlung* hypothesis based on "Die ästhetische Betrachtung und die bildende Kunst." *Analyses et comptes rendus:*

A. T. Ormond, *Concepts of Philosophy:* A. PENJON. Mary Whiton Calkins, *The Persistent Problems of Philosophy:* F. PILLON. A. Stöhr, *Philosophie der unbelebten Materie:* ABEL REY. E. Le Roy, *Dogme et critique:* JEAN BARUZI. C. Hémon, *La philosophie de Sully Prudhomme:* L. ARRÉAT. Ellen Bliss Talbot, *The Fundamental Principles of Fichte's Philosophy:* J. SEGOND. Georg Simmel, *Schopenhauer und Nietzsche:* G. PALANTE. Wundt (Max), *Der Intellectualismus in der Griechichen Ethik:* C. HUIT. Cantoni, *Kant:* J. SEGOND. Giuseppe Modugno, *Il concetto della vita nella filosofia greca:* C. HUIT. Franz Brentano, *Untersuchungen zur Sinnespsychologie:* B. BOURDON. *Revue des périodiques étrangers.*

Dowd, Jerome. *The Negro Races.* Vol. I: The Negritos, the Nigritians, the Fellatahs. New York: The Macmillan Co. 1907. Pp. xxiii + 492.

Leclère, Albert. *La morale rationnelle dans ses relations avec la philosophie générale.* Paris: Felix Alcan; Lausanne: Payot & Co. 1908. Pp. 539. 7.50 fr.

Störring, Gustav. *Mental Pathology in its Relation to Normal Psychology.* A course of lectures delivered in the University of Leipzig. Translated by Thomas Loveday. London: Swan Sonnenschein & Co. 1907. Pp. x + 298. $2.75 *net.*

Watson, John. *The Philosophical Basis of Religion.* Glasgow: James Maclehose & Sons. 1907. Pp. xxvi + 485. $3.00 *net.*

NOTES AND NEWS

THE *Athenæum* of December 14 contains the following account of the system for sociological study adopted by M. van Overbergh in his recently published treatise on the Bangala people: "In the *Athenæum* of April 6th reference was made to the project for codifying our knowledge on sociology put forward by M. Cyrille van Overbergh, principal secretary in the new Science and Arts Department in Brussels. M. van Overbergh now gives the first practical proof of the value of his own system in an elaborate treatise dealing with the Bangala people, who represent the most advanced of the Congolese races. The author explains the system he has adopted. In the first place, a complete collection of books, pamphlets, magazines, and articles containing references to the Bangalas has been listed in correct bibliographical form. This having been done, extracts were made setting forth each particular fact on a separate slip, and then these passages were grouped in the order prescribed under the two hundred and two headings in the interrogatory of the Belgian Sociological Society. The passages were then submitted to critical examination for the elimination of repetitions, and for the selection of the most complete statement on any given point or detail. The results were then submitted

for the revision of officials and explorers who had lived among the Bangalas, and also to a few specialists who, although they had not resided in the territory, had studied the subject from one standpoint or another. The result is an authoritative study of the Bangala people in all their social habits, as well as with regard to their present conditions, and moral development through contact with Europeans. By the arrangement adopted the student can find all the available information and the surest conditions with regard to any feature or fact in the Bangala social system. But the special merit of M. van Overbergh's treatment is that, copious as are the details supplied, more are invited from any quarter, and they can easily be added, for each page of the volume is perforated and easily detachable. Each page, moreover, can be purchased at the cost of a penny. As the author says in his preface: 'The work thus may be rendered continuously more perfect; it appeals to all disposed to help; it gives the maximum of help to those desirous of publishing their observations; it reduces the chance of error. Undoubtedly the task is a heavy one . . . it calls for collaboration.'"

THE publishers of the *Hibbert Journal* promise various articles likely to interest students of philosophy. Mr. Jacks, the editor, continues the article begun in the last issue, there entitled "The Universe a Philosopher." The forthcoming number will be entitled "The Alchemy of Thought." Father Tyrrell writes on "The Prospects of Modernism," contrasting modern sympathies and points of view with the medieval habits of mind inculcated in those institutions of "organized ignorance," the Roman Catholic seminaries. Professor G. A. Coe has an article on "The Sources of the Mystical Revelation," and Mrs. Stuart Ware writes on "The Magic and Mysticism of To-day."

THE *Harvard Theological Review*, a quarterly, issued by the faculty of divinity in Harvard University and published by the Macmillan Co., starts its career with the beginning of 1908. The first number contains articles by Francis G. Peabody, Arthur C. McGiffert, William Adams Brown, Benjamin W. Bacon, David G. Lyon, Thomas N. Carver, and Charles F. Dole. There are one hundred and twenty-five pages of text.

"Varieties of Religious Experience" has been translated into German by Dr. Georg Wobbermin, professor of theology at Breslau. The title in German is "Die Religiöse Erfahrung in ihrer Mannigfaltigkeit."

PROFESSOR E. B. TITCHENER, of Cornell University, has been appointed non-resident lecturer in psychology at Columbia University.

THE death is announced of Victor Brochard, contributor to the *Revue Philosophique* and author of "Sceptiques Grecs."